


Add. #3
A 354 bolt galvanizing

Rob Reis
04/03/2003 07:31 AM

To: <jrucker@tylin.com>
cc: "Duxbury, James" <jduxbury@tylin.com>, Robert_Kobal@dot.ca.gov,
"Rob Reis \E-mail)" <rob_reis@dot.ca.gov>, "Steve Margaris
\E-mail)" <steve_margaris@dot.ca.gov>
Subject: Re: DRAFT E2/T1 Addendum No. 3 Request 

Jim,

This looks good.

Rob.

"Jim Rucker" <jrucker@tylin.com>



"Jim Rucker"
<jrucker@tylin.com>
04/02/2003 04:56 PM
Please respond to
jrucker

To: "Duxbury, James" <jduxbury@tylin.com>
cc: "Steve Margaris \E-mail)" <steve_margaris@dot.ca.gov>, "Rob Reis
\E-mail)" <rob_reis@dot.ca.gov>, <Robert_Kobal@dot.ca.gov>
Subject: DRAFT E2/T1 Addendum No. 3 Request

James,
Please review.

Steve, Rob, and Robert,
FYI/Comment as necessary. I took the 4 hour window between blast cleaning
and hot-dip galvanizing from the Richmond-San Rafael example.

Thanks,
Jim Rucker, P.E.
T.Y. Lin International
619.692.1920 voice
619.692.0634 fax

Tracking #: 0E9A76444D99DB42B5192E255721D0DD2B6A0DEA



- E2-T1 Add 3 Request(V2).doc

3/27/03 mtg minutes from Alan Chow / Metric bolts
Pier 7

Allan Chow
03/27/2003 02:44 PM

To: Jess Avila/HQ/Caltrans/CAGov@DOT
cc: Rob Reis/HQ/Caltrans/CAGov@DOT, Steve
Margaris/HQ/Caltrans/CAGov@DOT
Subject: Re: A354 & A490 bolt corrosion protection (SFOBB) [E]

Jess:

There had been several bolts issues discussed during the meeting:

(1) T.Y.Lin found three manufacturers (including BBC, Nucor) in U.S. for metric bolts.

(2) Proposed metric bolt test specifications (**Steel Committee need to review the specifications by 4/4/03, Steve Margaris will bring you the package**)

The concept is to use Skidmore to determine snug tight condition (which dependent on the splice plates thickness) and specify the amount of turn of nuts beyond snug tight.

Some states & AASHTO allow turn of the nut method. Some research was done in University of Texas. Canadian are using the method. RCSC adaptation of this method is in the work. All these info should be in the package. Any question regarding this package, please contact Marwan Nader @ T.Y.Lin directly @ 415-291-3700.

(3) TC bolts will not be used due to addition paint application - *Not manufactured in metric*

(4) A490 corrosion protection - Construction concerns about the inorganic zinc may peel off inside the nut and cause jamming. Jim present Dacromet product which requires Degreasing, Blast to white metal, Spray on application of Zinc coat, then bake at 615 degree F for 15 min. Akashi Bridge in Japan use this product. Construction concerns the time required to approve the new product. (The process seems to be IC fastener process which is recommended by FHWA.) The other option is use organic zinc, but California's high standard of VOC requirement prohibit application of this coating. If the bolts are manufactured out of state which has lower VOC std., that is O.K. Organic Zinc performs better, no need to blast clean, thinner film, less nut jamming problem. At this point, Construction suggest to specify black A490 bolt and will consider a change order later on.

(5) A354 BD grade bolt corrosion protection - Due to the size of these bolts, the cleaning process will be blasting to SP10 condition, then hot dip. Rob has concerns with strain age embrittlement and suggested to test the final product with ASTM A143 "Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement". T.Y.Lin & Construction agree. Also, Construction will investigate the change order in Richmond-San Rafael to determine the applicability of this method.

(6) Bolt sampling & testing - METS distributed the suggested sampling & testing spec. The decision is QC report need to be furnish before release. Release tag is required before shipment.

bolt

Allan

Jess Avila

Relocate Staircase Handrail <u>Pylon S1 and S2</u> Internal Diaphragms Pylon S2 Elev. 89.00 Diaph. Handrail Pylon S2 Access Platform Handrail <u>Fort Point Arch</u> Outer Rib Deck Truss Bracing <u>Temporary Structure Support</u> Columns Rolled shapes, plates, bars Structural tubing bracing Steel pipe Tubing Sleeve <u>Traveler Rails</u> (including mounting brackets)	ASTM Designation: A 53, Grade B ASTM Designation: A 572 Grade 50 ASTM Designation: A 53, Grade B ASTM Designation: A 53, Grade B ASTM Designation: A 709 T Zone 2 Grade 50 ASTM Designation: A 572 Grade 50 ASTM Designation: A 709 T Zone 2 Grade 50 ASTM Designation: A 500 Gr B (fy=46ksi) ASTM Designation: A 53, Grade B ASTM Designation: A 513 Type 5 ASTM Designation: A 709 Grade 50
High strength low alloy columbium vanadium steel	ASTM Designation: A 709 WT Zone 2 Grade 50 or ASTM Designation: A 709 T Zone 2 Grade 50
High strength low alloy structural steel	ASTM Designation: A 709 WT Zone 2 Grade 50 or ASTM Designation: A 709 T Zone 2 Grade 50
Steel fasteners for general applications: Bolts and studs which include threaded rods and nonheaded anchor bolts Nuts Washers	ASTM Designation: A 307 or AASHTO Designation: M 314, Grade 36 or 55 ASTM Designation: A 563 including Appendix X1 ^(b,c) ASTM Designation: F 844
High strength steel fasteners: Bolts for structural steel joints Temporary Structure Support Lock Bolts All other steel joints Bolts and studs which include threaded rods and nonheaded anchor bolts, for general applications Unless otherwise noted	ASTM Designation: A 325X ASTM Designation: A 325N ASTM Designation: A 325X ASTM Designation: A 449 (Fu=120 ksi)
South Approach Viaduct HS Threaded Rod Anchor Bolts Temporary Structure Support HS Threaded Rod Anchor Bolts <u>Fort Point Arch</u> Deck Truss Top Chord	ASTM Designation: A 354 Grade BD ASTM Designation: A 354 Grade BD ASTM Designation: A 722 Type 2 (Fpu=150ksi)

Steel pipe (Hydrostatic testing will not apply)	ASTM Designation: A 53, Type E or S, Grade B; A 106, Grade B; or A 139, Grade B
(a) Grades that may be substituted for the equivalent ASTM Designation: A 709 steel, at the Contractor's option, subject to conformance with all chemical and mechanical properties of the specified A 709 steel.	
(b) Nuts made and marked in accordance with the requirements of ASTM Designation: A 194/A 194M, Grade 2H are an acceptable substitution for heavy hex nuts complying with ASTM Designation: A 563, Grade DH. This substitution is permitted, provided that the zinc coating, overtapping, lubrication, rotational capacity requirements and testing of the substituted nuts meet the same requirements as specified for the A 563 nuts, including all supplementary requirements. Proof load testing and stresses required for ASTM A 194 zinc-coated nuts shall be the same as required for ASTM A 194 plain uncoated nuts.	
(c) All zinc-coated nuts that will be tightened beyond snug or wrench tight shall be furnished with a dry lubricant conforming to Supplementary Requirement S2 in ASTM Designation: A 563.	

Except as otherwise shown on the Plans, high strength fastener assemblies, high strength steel bars, nuts, washers, and couplers shall be galvanized in accordance with Section 75-1.05 "Galvanizing," of Standard Specification. All ASTM A325 bolts shall be mechanically galvanized.

High strength threaded rods and couplers for anchor bolt assemblies shall be manufactured from steel conforming to AISI Grade 1040 or 4140, quenched and tempered steel. Each high-strength threaded coupler shall be tested for hardness by the Contractor. Each high-strength threaded coupler shall be permanently marked with the manufacturer's identification and "DH".

High strength threaded rod anchor bolts and couplers on the South Viaduct tower/bent columns and Temporary Structure Support columns shall not be galvanized.

Hot dip galvanizing of high strength threaded rods and steel bars with an ultimate tensile strength of 150 ksi shall be cleaned and prepared by abrasive blast cleaning. Acid pickling or other process that will result in hydrogen embrittlement shall not be used.

An approved thread locking system, consisting of a cleaner, primer and anaerobic adhesive, shall be applied where shown on the plans. Lubricants and foreign materials shall be removed from the threaded areas of both parts using the cleaner and small wire brush. The primer shall be applied to cover the threaded areas of both parts. The anaerobic adhesive shall be applied to fill the male threads in the area of the final position of the nut. The nut shall be installed at the location or to the torque shown on the plans, and an additional fillet of anaerobic adhesive shall be applied completely around the exposed junctions of the nut and male part.

The second paragraph in Section 55-2.01, "Description," of the Standard Specifications is deleted.

The first paragraph in Section 55-2.02, "Structural Steel," of the Standard Specifications is hereby deleted and replaced with the following:

55-2.02 Structural Steel. Unless otherwise specified or shown on the Plans, all structural steel plates and shapes shall conform to ASTM Designation as specified in this section "Steel Structures"

Check Testing. Structural steel shall conform to the specified ASTM Designations and the check testing requirements of this section.